

A weight hanging from a spring is stretched 5 units beyond its rest position ($s = 0$) and released at time $t=0$ to bob up and down. Its position at any later time t is

$$s = 5 \cos t$$

**What are its velocity and acceleration at time t ?
Describe its motion.**

$$v(t) = s' = -5 \sin t$$

$$a(t) = v'(t) = -5 \cos t$$

Jerk

The derivative of acceleration. If a body's position at time t is $s(t)$, the body's jerk at time t is

$$j(t) = \frac{da}{dt} = \frac{d^3s}{dt^3}$$

The Third Derivative!

Find the equations for the lines that are tangent and normal to the graph of

$$f(x) = \frac{\tan x}{x}$$

at $x = 2$.

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Numbers 33 - 37, 43

